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|--|------------|------------|-------------------|
| 1. (WO 2008/157422) MATERIALS, METHODS, AND SYSTEMS FOR CAVITATION-MEDIATED ULTRASONIC DRUG DELIVERY   | 24.12.2008 | A61B 17/20 | PCT/US2008/015742 |
| Materials, methods, and systems for targeted and non-targeted therapeutic delivery in vivo utilizing cavitation-mediated ultrasonic drug delivery. Targeted therapeutic delivery systems comprising specially designed nanocarriers for intracellular therapeutic delivery, mediated by either in vivo or in vitro, are also embodied. Nanocarriers comprised of substantially dendritic polymers, supramolecular assemblies, peptosomes, or mixtures thereof, are used to treat a variety of diseases in humans and other species, such as cancer, ophthalmic and other pathologies. Noninvasive sonic energy being applied to the patient in a controlled fashion at the treatment area results in...              |            |            |                   |
| 2. (WO 2008/130884) VARIABLE RELUCTANCE FAST POSITIONING SYSTEM AND METHODS  | 30.10.2008 | B23B 3/00  | PCT/US2008/013084 |
| A system is provided for positioning an article. In this regard, one embodiment of the system, among others, can be broadly summarized as containing a frame and a series of actuators connected to the frame, where the series of actuators contains at least one armature the armature is connected to an article and the series of actuators provides a force on the at least one armature to actuate movement of the article thereby causing movement of the article. Each actuator further contains at least one winding set capable of providing a coil flux, at least one capable of providing a permanent magnet flux, and a magnetically conductive core having the permanent magnet therein...             |            |            |                   |
| 3. (WO 2008/073168) SYSTEMS AND METHODS FOR HIGH-THROUGHPUT RADIATION BIOSIMULTANEOUS DETECTION  | 19.06.2008 | G06K 9/00  | PCT/US2008/007316 |
| Systems and methods for high-throughput radiation biosimultaneous detection are disclosed herein. In some embodiments, a high-throughput method for radiation exposure can include, in various possible sequences: marking a first capillary designed to retain a first sample; a first identifier; transporting a plurality of samples to a biosimultaneous detection system; inputting the samples into the biosimultaneous detection system; ceasing the first sample wherein each sample can be retained in a capillary and the first sample can be retained in the first capillary; and a plurality of capillaries including the first capillary from the centrifuge to a cutting device using a robotic arm... |            |            |                   |
| 4. (WO 2008/051314) METHODS, DEVICES, SYSTEMS AND COMPUTER PROGRAM PRODUCTS FOR STOCHASTIC, COMPETITIVE, FORCE-BASED ANALYTE DETECTION   | 02.05.2008 | G01N 33/53 | PCT/US2008/005131 |

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A cantilever array can be positioned adjacent a surface in the presence of a sample. The cantilever array includes a plurality of cantilever members of a specific binding pair thereon (A). The surface (S) includes the other member of a specific binding pair (B). Binding between the binding pair on the cantilevers and the surface can be detected. The presence, absence and/or concentration of a member of the sample can be detected based on the detected binding between the specific binding pair member on the cantilevers and the specific surface.

5. (WO 2008/021167) MANUFACTURABLE MICROPOSITIONING SYSTEM EMPLOYING NON-LINEAR ACTUATOR 21.02.2008 G06F 17/00 PCT/US2007/0

Embodiments of the present invention relate to systems and methods of position sensing that use a sensing target (290) with a position and to positioning modules (1000) and systems that position functional elements using such position sensing systems (1030). A positioner includes an encoding module and a processing module. The encoding module has an active encoding region through which the sensor is configured to move. Further, the encoding module is configured to generate a signal based on a portion of the sensing target (3350) region. The active encoding region has a dimension greater than the average critical dimension of the pattern or features. The processing

6. (WO 2007/100749) MESO-SCALE PARALLEL-KINEMATICS NANO-POSITIONING XY FLEXURE STAGE 07.09.2007 B64C 17/06 PCT/US2007/0

In one embodiment, a flexure subsystem comprises a base, a stage, a positioning mechanism, and a control device. The base and the stage are portions that are spaced apart from each other. The positioning mechanism is coupled between the base and the stage. The positioning mechanism includes an actuator and a flexure structure engaged by the actuator. The flexure structure includes base links coupled to the first base portion, first stage portion, and an intermediate member coupled to both the base and stage links. All structures are coupled by flexure hinges. The control device generates a control signal to change position of the stage by sending a control signal to the actuator which provides a force...

7. (WO 2007/067163) SCANNING BEAM WITH VARIABLE SEQUENTIAL FRAMING USING INTERRUPTED SCANNING RESONANCE 14.06.2007 A61B 6/00 PCT/US2005/0

A scanning device for use in an endoscope or other applications can be driven to scan a region with one or more different scanning successive scanning frames. The scanning device, which can include an optical fiber or reflective surface driven by an actuator to move in two axes, can be provided with a drive signal that is different during successive scanning frames so that the scanning pattern can be changed between successive scanning frames by one or more of size, amplitude in at least one direction, depth, duration, shape, and resolution. Thus, the scanning device can be employed for imaging, carrying out a diagnosis, rendering a therapy, and/or monitoring a site, using the appropriate...

8. (WO 2005/070073) APPLICATION OF THE KELVIN PROBE TECHNIQUE TO MAMMALIAN SKIN AND OTHER EPITHELIAL STRUCTURES 04.08.2005 A61B 5/05 PCT/US2005/0

A system and method is disclosed for obtaining measurements of the electric fields around skin wounds and lesions on mammals. The system and method is comprised of a vibrating metallic probe tip that is placed close to the skin in the air. By applying a series of known voltages to the skin beneath it, the skin's local surface potential can be measured and the lateral electric field can be calculated from the surface potential measurements. Surface artifacts that can affect the measurements are removed and active feedback is used to maintain a constant distance between the probe and the skin surface.

9. (WO 2005/043266) VARIABLE RELUCTANCE FAST POSITIONING SYSTEM AND METHOD 12.05.2005 H02K 33/00 PCT/US2004/0

The preferred embodiments of the present invention are directed to high bandwidth positioning systems such as fast tool servos (FTS). The invention includes, for example, diamond turning of mold with structured surface for mass production of films for brightness enhancement, diamond turning of molds for contact lens and micro-optical positioning devices. Preferred embodiments of the fast tool servo include a loop bandwidth of approximately 20 ± 5 kHz, with acceleration of up to approximately 1000 G or more. The resolution or position error root mean square (RMS) in a preferred embodiment, the full stroke or 50 μm can be achieved up to 1 kHz operation.

10. (WO 2005/017634) METHOD AND CIRCUIT ARRANGEMENT FOR THE PRECISE, DYNAMIC DIGITAL CONTROL OF ESPECIALLY PIEZOELECTRIC ACTUATORS FOR MICROPOSITIONING SYSTEMS 24.02.2005 G05B 19/35 PCT/EP2004/000000

The invention relates to a method and to a circuit arrangement for the precise, dynamic **digital** control of especially **piezoelectric** and **micropositioning** systems, comprising a regulator, whereby, in order to minimize position order deviations, the future system behavior correction signals for the purpose of feedforward correction are obtained. The aim of the invention is to reduce latency times in the scanner system. For this purpose, the signal of the command variable is passed over a switched bypass to a high-resolution **digital** converter being operated at the scan rate of the scanner system. The feedforward loop leads to a fast **digital-to-analog** converter.

11. (WO 2004/091956) RECONFIGURABLE VEHICLE INSTRUMENT PANELS 28.10.2004 G09G 5/06 PCT/US2004/000000

"Reconfigurable Tactile Control Displays" are provided which are particularly suited for applications such as automobile instrument panels and controls are desirable to provide a wide range of information, with minimal driver distraction and the safe input of data to vehicle communication based activities. Preferred embodiments utilize rear projection displays with electro-optically sensed physical controls offer, at low cost, a maximum of reconfigurability to different car lines, drivers, and tasks. Also disclosed are novel implementations as control or appliances, reading and other nouseaudio functions which may share common control and display pr...

12. (WO 2004/047632) APPARATUS AND METHOD FOR ASCERTAINING AND RECORDING ELECTROPHYSIOLOGICAL SIGNALS 10.06.2004 A61B 5/0476 PCT/US2003/000000

An arrangement and method for ascertaining and recording electrophysiological signals associated with a subject are provided. In particular, data associated with a movement of the subject from one or more motion sensors (104) can be received. Such movement may include subject, swallowing by the subject, etc. The first data also can include noise associated with a blood flow motion within the subject, ballistocardiac motion within the subject, etc. Second data associated with intrinsic voltages measured (106) may also be received. The output or result data can be calculated based on the first motion data and the second data. The output (or result data) ...

13. (WO 2004/039489) COMPUTER PROGRAMS, WORKSTATIONS, SYSTEMS AND METHODS FOR MICROFLUIDIC SUBSTRATES IN CELL 13.05.2004 B01L 3/00 PCT/US2003/000000

The invention provides computer program products for coordinating the movement of cells and other components in a microfluidic system for acquisition. The microfluidic workstation may be used to examine the physiological responses of ion channels, receptors, neurons, and streams. The system may also be useful for screening compound libraries to search for novel classes of compounds, screening new compounds for effects on specific ion channel proteins and receptors, and to rapidly determine dose-response curves in cell-based assays.

14. (WO 2004/036202) NANOELECTRODES AND NANOTIPS FOR RECORDING TRANSMEMBRANE CURRENTS IN A PLURALITY OF CELLS 29.04.2004 G01N 33/487 PCT/US2003/000000

The present invention relates to methods of measuring electrical properties of a cell using electrode devices comprising tapered nanodimensional structures ("nanoelectrodes") for insertion into a cell. The devices are used to measure electrical properties of the cell and, optionally, electroporate the cell or subcellular structures within the cell. The invention also provides arrays of electrode devices having nanodimensional structures sequentially measuring the electrical properties of cells (e.g., such as surface immobilized cells). The electrodes can be used to measure ion channels and in HTS assays to identify drugs which affect the properties of ion channels. The invention additionally p...

15. (WO 2003/061470) METHOD AND APPARATUS FOR NANOMAGNETIC MANIPULATION AND SENSING 31.07.2003 G01R 33/28 PCT/US2003/000000

The invention combines (A) capabilities in fabrication, characterization, and manipulation of single domain magnetic nanostructures with chemistry of biological molecules to modify the magnetic nanostructures into magnetic sensors (40) and magnetically controllable nanoscale characterization scheme is realized by combining nanomanipulation and observation of small magnetic structures in fluids. By coating biological molecules, ultra-small, highly sensitive and robust biomagnetic devices are defined, and molecular electronics and spin elec...

When these nano-sensors are integrated into microfluidic channels, highly efficient single-molecule detection chips for rap...

16. (WO 2002/089686) RF TISSUE ABLATION APPARATUS AND METHOD

14.11.2002 A61B 18/14 PCT/  
US2002/0

A tissue-ablation method and apparatus are disclosed. The apparatus includes a plurality of RF ablation electrodes, and a plurality of movable from retracted to deployed positions in a tissue to be ablated. A control device in the apparatus is operatively connected to an RF power to the electrodes, to produce tissue ablation that advances from individual-electrode ablation regions to fill a combined. The control device is operatively connected to the sensor elements for determining the extent of ablation in the regions of the sensor. RF power to the electrodes can thus be regulated to control the level and extent of tissue ablation throughout...

17. (WO 2002/054941) BONE-TREATMENT INSTRUMENT AND METHOD

18.07.2002 A61B 18/14 PCT/  
US2002/0

Disclosed is a system for palliatively treating a pain-causing tumor on or in bone. The system includes an instrument (286) having a structure adapted to be inserted into the bone tumor, where the structure (294) is activatable to ablate tumor tissue, and a conduit in the instrument can be supplied to the tumor, when the ablating structure is inserted into the tumor. Also included are a first connecting structure for structure (294) to an activating device, such as an RF current source, and a second connecting structure for connecting the conduit...

18. (WO 2001/090749) SCANNING KELVIN MICROPROBE SYSTEM AND PROCESS FOR BIOMOLECULE MICROASSAY

29.11.2001 G01N 27/00 PCT/  
CA2001/0

There is provided a system and process for detecting biomolecular interaction on a substrate having a biomolecule immobilized on a surface. The system and process incorporate a scanning Kelvin microprobe (SKM) capable of analyzing surface topography as well as a conductance image signal. Also provided is the use of SKM in measuring and analyzing biochemical molecular interactions between a probe bound to a substrate, and a target suspected to be present in a liquid sample. One of the probe and target combination is a biomolecule such as a polypeptide, or a small molecule, and an antibody/antigen combination may be used.

19. (WO 2001/090730) SCANNING KELVIN MICROPROBE SYSTEM AND PROCESS FOR ANALYZING A SURFACE

29.11.2001 G01N 27/00 PCT/  
CA2001/0

A scanning Kelvin microprobe (SKM) system capable of measuring and analyzing surface characteristics of samples is provided. Also provided is measuring and analyzing surface characteristics of samples. Further, there are provided uses of the SKM system in measuring and analyzing surface characteristics of conductors, semiconductors, insulators, chemicals, biochemicals, photochemicals, chemical sensors, biosensors, microelectronic devices, electronic imaged devices, micromachined devices, nano-devices, corroded materials, stressed materials, contaminated materials, oxides, thin films, and self-assembling monolayers.

20. (WO 2000/043552) MULTIFUNCTIONAL AND MULTISPECTRAL BIOSENSOR DEVICES AND METHODS OF USE

27.07.2000 C12Q 1/00 PCT/  
US2000/0

GB0060079 are advanced multifunctional biochip devices capable of specifically detecting and quantitating multiple biomolecular targets, polypeptides, polynucleotides, and other intracellular and extracellular biomolecules. In illustrative embodiments, the miniaturized biochip device comprises multiple biological sensing elements, excitation micro-lasers, a sampling waveguide equipped with optical fluorescence detection, electro-optics, a bio-telemetric radio frequency signal generator, and a plurality of molecular probes, all contained on a single integrated circuit. The biochip is suitable for multi-gene analysis, and multi-peptide detection, as well as simultaneous detection and...

21. (WO 2000/036410) SENSOR ARRAY-BASED SYSTEM AND METHOD FOR RAPID MATERIALS CHARACTERIZATION

22.06.2000 B01J 19/00 PCT/  
US1999/0

A modular materials characterization apparatus includes a sensor array (10) disposed on a substrate (16), with a standardized array format, electronic test and measurement apparatus (54) for sending electrical signals to and receiving electrical signals from the sensor array for making electrical contact (50) to the sensors in the standardized array format, an apparatus for routing signals (129) between one or more of the electronic test and measurement apparatus and a computer (52) with a computer program recorded therein for controlling a...

- 18.11.1999 G03F 7/20 PCT/  
US1999/

A high precision friction drive positioning stage system is described. The friction drive positioning stage system uses three special piezoelectric actuators, each having a tip in contact with the stage and being capable of generating directional elliptical motion which allows the stage to move in any direction in the stage and in rotation. In one embodiment, each actuation system includes a plurality of piezoelectric elements in contact with the stage, from which the tip of the actuation system is actuated.

- 21.01.1999 H01L 41/09 PCT/  
US1998/

A **piezoelectric** motor including a motor body, a compliant layer in communication with the motor body, and a predetermined number of legs in communication with the compliant layer, which urges the legs into engagement with a substrate. Each of the legs includes a **piezoelectric** water pump, which causes the legs to move in a reciprocating motion. The legs are urged into engagement with the substrate by the shear motion. The actuation of a **piezoelectric** layer causes the corresponding leg to be displaced relative to a substrate. This displacement causes the legs to move in a reciprocating motion. The transfer of strain energy to the compliant layer. The energy stored in the compliant layer may be released, causing the motor to actuate. The legs may be capable of moving independently from one another and also may be capable of moving sequentially or in parallel.

- 18.09.1997 G02B 21/00 PCT/  
US1997/

A microscopy or lithography system using a low-resolution image projection system, having a very small numerical aperture and large focal length, in conjunction with a microlens array [2], each element of which has a large numerical aperture but very small field. The projection system produces a large aperture stop [7] which is imaged by the microlenses [2] onto an array of diffraction-limited microspots on the microscope sample. The microspots are at the microlens focal point positions, and the surface is scanned to build up a complete raster image from the focal point array. The scanning sequence determines the image resolution and field size which is the cause or impact of the complexity and expense of the tool.

- 24.07.1997 G02B 21/00 PCT/  
US1996/

An optical detector (38) includes a charge-coupled-device (CCD). The CCD comprises an active cell (72) for receiving a narrow beam of light and generating photoelectrons in response thereto, and a first stage readout register (68) comprising a row of *N* transfer cells (76). A gate structure (74) transfers charge packets consecutively from the active cell into the first stage readout register, whereby *N* successive readouts of the *N* cells respectively of the first stage readout register. *N* second stage readout registers each comprise *M* transfer cells. A second stage gate structure (70) transfers *M* charge packets from the *N* cells of the first stage readout register.

Start At